

Conference Abstract

Isolation and identification of *Bacillus* species present in the Panchagavya preparations

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Abstract

Panchagavya has been popularly used in organic farming to promote plant growth and control various pests and diseases. During the preparation of Panchagavya, a mixture of five cow products and sugar sources such as jaggery, sugarcane juice and ripen banana are mixed and allowed for microbial proliferation. The microbes and their secretions are responsible for the bioactivity of this preparation. Some *Bacillus* species have been reported as an excellent bio-control agent to manage diseases in plants. With this background, the present study was aimed to isolate and identify the *Bacillus* sp. which could be one of the active ingredients in Panchagavya. Three Panchagavya preparations were obtained from local producers. They were serially ten-fold diluted up to thrice, and the last dilution was plated out on nutrient agar medium, this was repeated three times. After incubating the plates at 37°C for 24 h, the total number of bacterial colonies and bacterial colonies resembling *Bacillus* (usually large, spreading, and irregularly shaped) were counted. The *Bacillus* type colonies were sub-cultured on fresh media, and the isolates were identified based on the colony morphology, cell morphology and biochemical properties as described in the Bergey's manual of systematic bacteriology. Totally eleven characteristic features of the isolates were studied to identify the bacterial isolates. The results showed that 1 mL of the tested commercial preparations consisted of about $23 \pm 3 \times 10^4$ viable bacterial cells. Totally ten different *Bacillus* type colonies were noted from tested three samples. However, only eight isolates showed positive results for the genus *Bacillus* when conducting biochemical and cell morphology-based tests. Further biochemical studies revealed that the Panchagavya preparations had *B. aquimaris*, *B. subtilis*, *B. cereus*, *B. licheniformis*, *B. endophyticus* and *B. barbaricus*. The *Bacillus* species such as *B. subtilis* and *B. cereus* have been identified in Panchagavya by Radha and Rao [1] in India, and their bio-control properties have been reviewed by Shafi *et al.* [2]. In conclusion, in this study, different *Bacillus* species have been isolated and identified from Panchagavya. The bio-control potential of some species has been already proved, but others need to be studied.

Keywords: Bacillus, Panchagavya, Bio-activity**Acknowledgement:** This work was supported by the University Jaffna, Sri Lanka, under the University Research Grant (URG/2019/SEIT/24).**References**

- [1] Radha and Rao, Indian J. Microbiol., (2014), **54** (4), 413-418
- [2] Shafi *et al.*, *Biotechnol. Biotechnol. Equip.*, (2017), **31** (3), 446-459